



**REASON & REVELATION**  
*A Monthly Journal of Christian Evidences*

JANUARY 2022 • VOL. 42 • NO. 1

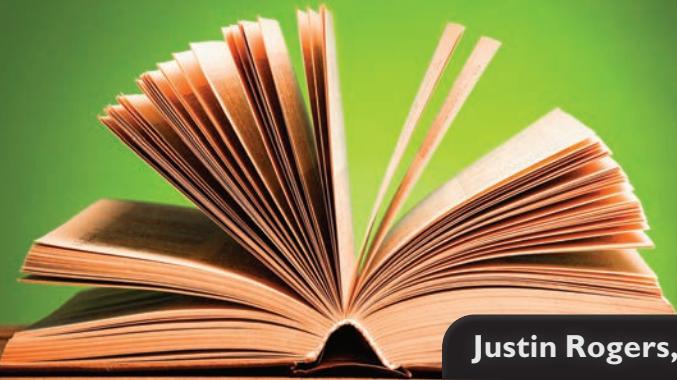
# The BIRTH of the BOOK

More  
**Unfossilized**  
Evidence of  
**“Dinosaurs”**  
Living in  
the **Recent**  
**Past**

**2021**  
Bound  
Volumes

# THE INTEGRITY OF THE BIBLICAL TEXT

## PART I: The Birth of the Book



Justin Rogers, Ph.D.

**[Editor's Note:** This article is the first installment in a three-part series pertaining to the integrity of the biblical text through the centuries. AP auxiliary writer Dr. Rogers serves as an Associate Professor of Bible at Freed-Hardeman University. He holds an M.A. in New Testament from FHU as well as an M.Phil. and Ph.D. in Hebraic, Judaic, and Cognate Studies from Hebrew Union College-Jewish Institute of Religion.]

**O**NE could argue the invention of the book is the most important technological development in Christian history. What we today call a “book” is also referred to by the Latin word *codex*, or a series of pages bound together on one side. Although we take this innovation for granted today, it was, at one point, as cutting edge as the newest modern smartphone. Christianity’s readiness to embrace the new technology, along with Judaism’s apparent reticence to it, was among the most important reasons for the growth of the church and the spread of the Gospel in the early centuries of the Common Era. Since the term “Bible” means “book,” either in the form of a scroll or a codex, it is imperative that we consider the

production of books in the ancient world in determining how, indeed, we got the Bible.

### BEFORE THE BOOK

**T**HE “book” in the form of the codex is a relatively recent development. Apparently invented by the Romans, none of the Old Testament characters ever saw a codex. Thus we should not imagine Moses, Isaiah, or Daniel reading a book as we would today. Other, less convenient writing mediums were used. By the time of the New Testament, however, the codex had made its way into the world. Consider various writing materials and mediums before the book, as we know it, was born.

### Clay Tablets

The earliest known writing material is the clay tablet. Typical of Assyria and Babylonia, wet clay tablets would be inscribed with a stylus and usually placed in the Sun to dry. The Bible only contains one reference to such a writing surface. Ezekiel, in Babylonian exile, is instructed, “You also, son of man, take a clay tablet and lay it before you, and portray on it a city, Jerusalem” (Ezekiel 4:1). Although Ezekiel

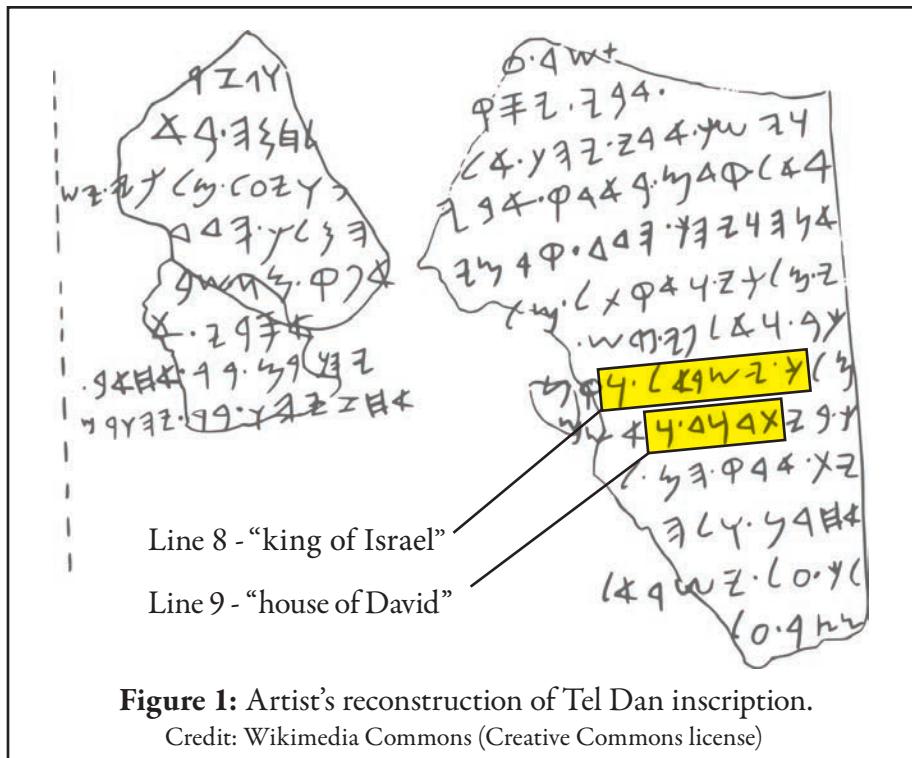
is not being commanded to write words here, the process of drawing a picture is the same. The Hebrew word for “writing tablet” (*l'vēnāh*) is likely borrowed from an Akkadian word meaning “baked,” Akkadian being the language of the Assyrians and Babylonians. The same word describes dried bricks elsewhere used for building materials (e.g., Genesis 11:3; Exodus 1:14).

### Ostraca

Israel had its own version of baked mud. Broken pieces of pottery, known by the Greek word *ostraca*, served as the ancient equivalent to scrap paper. Although the Bible never mentions ostraca as a writing surface, hundreds of ostraca have been discovered in Palestine from many periods of history. The “Samaria Ostraca” collection, probably dating no later than the eighth century B.C., includes over 100 documents relating to agriculture. The Lachish Letters, written in the early sixth century B.C. when Judea was under Babylonian attack, record communications between the strategic military fortresses in the midst of the Babylonian siege.

### Stone

Stone was readily available in ancient Israel. A heavy and durable material, stone was apparently the writing material for the earliest parts of the Scriptures (Exodus 32:19; Deuteronomy 9:17). Although no Scripture engraved in stone has survived from the Old Testament period, a number of secular inscriptions have survived, two of which mention the “house of David,” and date to the ninth century B.C. (the Tel Dan inscription and the Mesha inscription). In Figure 1, an artistic reconstruction of the Tel Dan inscription, I have highlighted the expressions “king of Israel” in line eight, and “house of David” in line nine.



**Figure 1:** Artist's reconstruction of Tel Dan inscription.

Credit: Wikimedia Commons (Creative Commons license)

## Plaster

The Israelites also used plaster as a writing surface. Painted onto stone, the Israelites could inscribe the wet plaster with images and writing. This writing material had the advantage of being cheap and easy to erase. Of course, it was limited to indoor use. The Bible refers only once to this kind of medium (Deuteronomy 27:2-3), but many secular examples survive that are of interest to the student of the Bible. One was found in the Jordanian town of Tel Deir 'Alla and dates to the late ninth century B.C. This plaster inscription mentions the biblical character "Balaam son of Beor" (cf. Numbers 22-24). Another, dating from around 800 B.C. from Kuntillet 'Ajrud, raised an academic sensation because of its proposed translation, "To Yahweh of Teiman and to his Asherah." This latter inscription provides archaeological support for what the Bible tells us: Israel worshipped the Lord alongside of other gods (Exodus 20:3; Judges 3:7; 2 Kings 21:7). Whether the reference to Asherah, a female

goddess, represents the mistaken belief that God had a wife is disputed among scholars.

## Wax Tablets

Whereas the Mesopotamians preferred the clay tablet, the Greeks generally used the wax tablet. Two flat pieces of wood were held together on one side with a hinge or series of cords through drilled holes. The wooden pieces were slightly hollowed to receive a thin coat of wax which the author could inscribe with the desired message. The resulting product resembles in appearance a modern laptop computer (see Figure 2). It would be possible to adjoin several additional wooden plates so that the product began to take on an accordion shape. It is from this accordion-style series of tablets that we receive the word "codex," and probably the concept as well. The wax tablet proved to be popular among students and note-takers alike because it could be quickly erased and reused.

## Metal

Metal was occasionally used as a writing material. The earliest copy we possess of any part of the biblical text is found on two small silver scrolls that were discovered in a tomb dating to the late seventh century B.C. These scrolls contain the so-called "priestly blessing" (Numbers 6:23-26). Gold is mentioned as a writing material in Exodus 28:36 where God orders a plate to be worn by the High Priest engraved with "holy to the Lord." This engraving, however, represents an exceptional case for an important spiritual office. Metal otherwise would have been impractical as a normal writing surface.

## Papyrus

Papyrus does not appear to have been common in ancient Israel, but the Bible does reference the papyrus plant twice (Job 8:11; 35:7). Interestingly, the Hebrew word translated "papyrus" (*gōmeh*) describes the boat made by the mother of Moses (Exodus 2:3), but the term



**Figure 2:** Ancient scribe with wax tablet. Credit: Wikimedia Commons (Creative Commons license)

is translated “bulrushes” in the New King James Version (cf. Isaiah 18:2 where the word is used in a similar context). An aquatic plant native to Egypt, papyrus became the dominant writing material in Egypt for centuries. Our first example is conventionally dated to around 3000 B.C., although the papyrus is, unfortunately, blank.

To manufacture a papyrus page, one starts by peeling away the papyrus bark to expose the pith. Then the pith is cut into uniform thin strips which are laid beside one another. A second identical layer is then placed horizontally across the vertical strips at a right angle. A light, wooden hammer pounds the two layers together until they merge to form a relatively durable page. Finally, the papyrus is dried and scrubbed with a pumice stone so as to create a smooth, light writing surface. Multiple pages are then glued together on one edge to form a continuous scroll.

Because the papyrus was native to Egypt, the first “Israelite” papyri that survive are the Elephantine papyri dating to the fifth century B.C. These documents reveal a Jewish community living on Elephantine

Island in southern Egypt, but still retaining contact with the homeland. The community sent letters both to the Persian authorities and to the Jerusalem priests requesting permission to rebuild their Temple to the Lord and asking to observe the Passover.

#### Animal Skin

The most durable and expensive writing surface in antiquity was parchment. Still used for valuable archival documents today (the *Declaration of Independence* is written on parchment), parchment is carefully produced from animal skins. “Vellum” is the term used to describe the best parchment in antiquity, and our finest manuscripts of the New Testament are written on this material. The rise of the codex is at least partially responsible for the popularity of parchment.

The production of parchment is extremely involved. After the skin was cut away from the animal, it was scraped to remove as much hair, epidermis, and flesh as possible. Then it was soaked in slaked lime for several days and re-scraped to remove any excess hair or flesh. The skin was soaked again in a bath of

lime to cleanse it, after which it was stretched onto a wooden frame to dry. After a lengthy and repetitious process of wetting and scraping, the skin would then be smoothed with a pumice stone and whitened with chalk, yielding a smooth and durable writing surface. Paul mentions his “parchments,” probably referring to part of the Bible (2 Timothy 4:13). Such a copy would have been extremely valuable, and it is understandable why Paul would desire to possess such an object in the days leading up to his death.

Parchment was preferred to papyrus as time went on (especially by the fourth century A.D.). This was due to its strength, durability, versatility, and beauty. As Colin Roberts and T.C. Skeat recognize,

even the strongest supporters of papyrus would not deny that parchment of good quality is the finest writing material ever devised by man. It is immensely strong, remains flexible indefinitely under normal conditions, does not deteriorate with age, and possesses a smooth, even surface which is both pleasant to the eye and provides unlimited scope for the finest writing and illumination.<sup>1</sup>

## THE PRODUCTION AND COST OF BOOKS

**T**HE modern book industry is big business, generating over 27 billion dollars worldwide in 2013.<sup>2</sup> The largest printing houses can produce over one million printed pages per day! Trade paperbacks can be widely purchased for less than a dollar, and specialized reference sets rarely exceed \$500. Furthermore, over 84% of the world’s modern population is functionally literate.<sup>3</sup> These figures stand in stark contrast to the reality in the ancient world.

First of all, the production of books is tremendously tedious. We

## SPEAKING SCHEDULES

### Kyle Butt

Jan. 23

Elijah, GA

(760) 635-2950

### Eric Lyons

Jan. 12, 19, 26

Richmond, CA

(510) 306-2726

Jan. 23

Tullahoma, TN

(931) 455-3264

### Dave Miller

Jan. 2

Montgomery, AL

(334) 264-2985

Jan. 5

Richmond, CA

(510) 306-2726

Jan. 12

Cookeville, TN

(931) 432-2333

### Jeff Miller

Jan. 30

Montgomery, AL

(334) 264-2985

have already spoken of the labor that would go into producing a single sheet of writing material. Then one has to locate a scribe, purchase the proper concoction of ink, and dictate the material. Then follows the “binding” in the case of a codex or rolling the sheets onto a wooden rod in the case of a scroll. Such a process yields one copy of one work, which was proofread before additional copies were made. The next step is to make multiple copies for dispersion. Dispersing copies is literally called “giving out” (*ekdosis* in Greek; *editio* in Latin, from which we derive the word “edition”), and is the equivalent to what we today call “publication.”

Second, books were expensive. Each of the aforementioned steps costs money. Scribes charged by the line, and their fee represented the bulk of the cost of production. The *Edict of Diocletian* to fix prices (issued A.D. 301) states, “To a scribe for best writing, 25 denarii per 100 lines; for second quality writing, 20 denarii per 100 lines; to a notary for writing a petition or legal document, 10 denarii per 100 lines.”<sup>4</sup> The fact that the emperor felt the need to fix prices indicates that inflation had run rampant in his day. Scribal fees in the first century would have been much less, but books were by no means cheap. Martial records that a high-quality book of approximately 40 pages (a total of ca. 120 lines) would cost five denarii, or nearly a week’s pay for a day laborer.<sup>5</sup> Slightly later, Pliny the Younger (ca. A.D. 61-115) informs us that his uncle’s library of common books could have been sold for 400,000 sestertes (approximately 16,000 denarii).<sup>6</sup>

As expensive as books were, money did not pile up in the lap of the author. No author of the early centuries of our era expected to receive substantial compensation for his writing. This was the business of booksellers. When Greek

became the *lingua franca* of the classical world after the conquests of Alexander, the world witnessed the construction of a number of public libraries. These public collections spawned private libraries, which were guarded as precious treasures. Of course, book collectors required booksellers. We have the names of several from Rome who maintained prestigious bookstores from the first century B.C. through the second century A.D.: the Sosii brothers, Dorus, Tryphon, Quintus Pollius Valerianus, Secundus, and Atrectus.<sup>7</sup>

Most of these individuals would have been responsible for copying the books they sold. After all, *librarius* is a term both for “bookseller” and “copyist.” How they copied books we do not know. Some have imagined a *lector* (“reader”) surrounded by dozens of scribes taking down the text at his dictation, but no direct evidence of such large-scale production exists.<sup>8</sup> In any case, it is true that booksellers were not responsible for books of the finest quality. Wealthy collectors and scholars preferred to keep slaves trained as scribes.<sup>9</sup> The example of Cicero (106-43 B.C.) is exceptional, but his book distributor, Atticus,

had a private scribal army sufficient to meet demand after Cicero’s death.

We should pause here to mention that the preceding paragraphs represent exceptional cases. Most people in the ancient world could not read, and most of those who did could not afford books. Public readings thus became an important element of informal public education. The desire on the part of pagans to learn about the Jews or Christians doubtless drove many to attend synagogues and, later, churches, where it seems the chief aim from the beginning was the reading of Scripture. Literate or not, all had the opportunity to be educated in the Word of God.

## FROM SCROLL TO CODEX

**JUDAISM** preferred the scroll. Scrolls discovered in the 1940s and 1950s turned up over 1,000 scrolls of both biblical and non-biblical material. Not a single codex was found. Judaism’s preference for the scroll is based on a long-established tradition of understanding the original Scriptures to be written on scrolls. The Hebrew words,

(cont. on p. 8)

**Reason & Revelation** is published monthly by Apologetics Press, Inc. Periodicals postage paid at Montgomery, AL. **Postmaster:** Send address changes to **Reason & Revelation**, 230 Landmark Dr., Montgomery, AL 36117; **ISSN:** [1542-0922] **USPS#** 023415.

**Apologetics Press** is a non-profit, tax-exempt work dedicated to the defense of New Testament Christianity. Copyright © 2022. All rights reserved.

### Editor:

Dave Miller, M.A., M.Div., M.A.R., Ph.D.\*  
(\*Communication, Southern Illinois University)

### Associate Editor:

Jeff Miller, M.S., Ph.D.\*  
(\*Biomechanical Engineering, Auburn University)

### Annual Subscription Rates:

\$14.00	Domestic
\$12.00	Domestic Bulk (5+ TO SAME ADDRESS)
\$14.00	Canada & Overseas (PLUS SHIPPING)

### General inquiries, changes of address, or international callers:

Phone: (334) 272-8558  
Fax: (334) 270-2002

### Orders:

Phone: (800) 234-8558  
Fax: (800) 234-2882

On-line Web store/catalog, subscription order/renewal form, current issues, archives, and other information (all orders processed on a secure server):

URL: www.ApologeticsPress.org  
E-mail: mail@ApologeticsPress.org

### Discovery—Scripture & Science for Kids

**Kids** is a sister publication for children. For more information, please contact our offices or visit the Discovery Web site at:

URL: www.DiscoveryMagazine.org

# Bound Volumes

Save the volumes from the past

*R&R* 1998-2020\*

Starting at \$3.00 ea.

*Discovery* 1999-2020\*

Starting at \$3.00 ea.

\* Some years are no longer available.

Order today by calling

**(800) 234-8558**

or by visiting

[store.ApologeticsPress.org](http://store.ApologeticsPress.org)



## **Discovery:**

Bible and Science magazine for kids

## **Reason and Revelation:**

12 issues containing articles on: Is it Racist to Oppose Homosexuality?; What is Messianic Judaism?; Is God the Cause of Evil in the World?; Is Peter the Rock of the Church?; and much more.

REASON & REVELATION

BOUND VOLUME XXXVII / 2017



Reason & Revelat

R

202

BOUND VOLUM

230 Landmark Drive, Montgomery,  
ApologeticsPress.org

*R&R and Discovery*

# 2021 BOUND VOLUMES

**\$14.00 ea.**

Plus shipping  
Taxes apply in Alabama

The central image features a large, open book with a green cover. The word "DISCOVERY" is written in large, red, stylized letters, with a small icon of an open book integrated into the letter "O". Below the main book, a wooden shelf holds three smaller issues of the magazine. The top issue's cover shows a tree at sunset with a person walking towards it. The middle issue's cover shows a close-up of a Tasmanian devil's face. The bottom issue's cover shows a squirrel. Each of these smaller covers has a red border and includes text like "IN THIS ISSUE: SQUIRRELS", "EVOLUTION & THE BIBLE", and "EVOLUTION & THE FLOOD". At the bottom left of the main book cover, it says "SCRIPTURE & SCIENCE FOR KIDS". At the bottom right, it says "2021 BOUND VOLUME".

however, admit other possibilities. The term usually translated “write” (*kātav*) can also mean “inscribe,” and the term translated “scroll” or “book” can also mean “inscription.” The earliest evidence we have for the existence of scrolls does not predate the first millennium B.C., and thus we have no evidence placing the invention of the scroll to the time of the earliest biblical books. Nevertheless, it cannot be denied that Judaism adopted the scroll from a very early time, and used it exclusively, at least for biblical writings, throughout their ancient history.

The Christians, by contrast, seem to have adopted the codex at least by the second century, and probably as early as the first century A.D. This move stands in stark contrast to the general trend. Of all the books we possess from the second century A.D., scrolls still account for 90% of the whole! So Christians countered the book culture as it was then known. Even more important, since Christian copies of the Old Testament were made from Jewish ones, we must conclude that Christians conscientiously changed the medium of Scripture from scroll to codex. This would have been very much “against the grain.” So why did the Christians make the move?

The codex had a number of advantages, which explain its eventual triumph over the scroll in the fourth century A.D.:

- The codex had a greater capacity than the scroll. It could accommodate almost twice as much material as the scroll, allowing the scribe to copy both front and back (*recto* and *verso*).<sup>10</sup> The Gospel accounts were circulating together, as were the letters of Paul, by the late second century. They would have occupied about 130 pages or 260 leaves.<sup>11</sup> The typical scroll, by contrast, is only about 20 pages long.<sup>12</sup> In

other words, a scroll containing all four Gospel accounts would be 13 times longer than a scroll of normal length!

- The codex was cheaper. One estimate is that it would cost about 25% less than a scroll of the same required length.<sup>13</sup> This does not mean the codex was cheap. The Edict of Diocletian fixed the price of a luxury codex of Vergil at 2500 denarii. Again, the Edict is not representative, nor is the codex in question typical, but if the average price in earlier times were even a tenth of that inflated value, a codex would be out of the price range of most. Imagine, then, how much more expensive the scroll would be.
- The codex was more portable. Because it required approximately half the length of the scroll, the codex was much lighter to transport. Also, to keep scrolls from rolling away and unwinding their contents, boxes (*capsae*) were used as storage containers. These only added to the weight and bulk of the roll.
- The codex was easier to use. To look up a reference earlier in the codex one need only flip back through the pages. To do the same with a scroll one would require incessantly unwinding and rewinding. If a reference should happen to be at the end of the scroll, one could repeat the process for a considerable length of time. Then, if one dropped the handle, the scroll went rolling across the room, unspooling as it traveled. Such mistakes could cause the scroll to twist and tear. Pliny the Younger tells the story of the Roman consul, Verginius Rufus, who slipped and broke his col-

larbone chasing after a runaway papyrus scroll.<sup>14</sup>

- The codex was more durable. The outer side of the scroll was most always exposed. Every time it was unwound or rubbed or squashed it was prone to damage and required repair. Papyrus especially grows more fragile over time, and all preceding pages are exposed every time the document is unrolled. The codex, on the other hand, featured a wooden cover to protect the contents, especially at the beginning of works—the very place where scrolls would be most vulnerable. This does not mean, however, that the codex was superior in every way. While a cover did offer additional protection, the original covers of codices are almost always missing. Frequently, both the beginning and ending of works, which best inform us about the author and recipient, are missing as a result.

## CONCLUSION

The painstaking efforts responsible for the production of an ancient book ought to cause us to appreciate the desire to read, to learn, and to disseminate information. This is especially true of our brothers and sisters in the early centuries. The Bible was not copied and bound because the process was easy or cheap. We should assume most churches in the early centuries felt fortunate to possess even one codex of the Gospel accounts, of Paul’s epistles, or of the books of Moses. Few churches were wealthy enough to acquire the entire Bible in the multiple volumes such a product would require. Individual Christians, as a rule, would not have owned private copies of any complete biblical books.

Contrast the ancient reality with the contemporary one. Consider that you likely possess dozens if not hundreds of bound books in your home. You are probably not without access to a Bible in its complete form. How we got the Bible depends in large measure on the invention of the book, for the very word “Bible” (*biblos*) means “book.”

## ENDNOTES

<sup>1</sup> Colin H. Roberts and T.C. Skeat (1983), *The Birth of the Codex* (Oxford: Oxford University Press), pp. 7-8.

<sup>2</sup> <http://www.publishers.org/press/138/>.

<sup>3</sup> <http://www.uis.unesco.org/literacy/Documents/fs26-2013-literacy-en.pdf>.

<sup>4</sup> See William A. Johnson (2009), “The Ancient Book” in *The Oxford Handbook of Papyrology*, ed. Roger Bagnall (Oxford: Oxford University Press), p. 263.

<sup>5</sup> Martial, *Epigrams* 1.117, referring to a bookstore featuring Martial’s own works in a copy “scraped with pumice stone and adorned with purple for five denarii” (my translation).

<sup>6</sup> Pliny the Younger, *Epistles* 3.5.

<sup>7</sup> See Jérôme Carcopino (1940), *Daily Life in Ancient Rome*, trans. E.O. Lorimer, ed. Henry Rowell (New Haven: Yale University Press, 2003 edition), p. 194.

<sup>8</sup> See the criticisms of Gamble in (1995), *Books and Readers in the Early Church: A History of Early Christian Texts* (New Haven: Yale University Press), pp. 88-89.

<sup>9</sup> Atticus, friend of Cicero, is one example (Cornelius Nepos, *Life of Atticus* 13).

<sup>10</sup> On a papyrus page, the *recto* represents the side on which the fibers of the papyrus run horizontally whereas the *verso*, not usually considered suitable for copying in the case of a scroll, represents the side on which the fibers run vertically.

<sup>11</sup> See Roberts and Skeat, p. 66.

<sup>12</sup> On the typical length of a roll, see Roberts and Skeat, pp. 169-72.

<sup>13</sup> Gamble, p. 55.

<sup>14</sup> Pliny the Younger, *Epistle* 2.1.

# More Unfossilized Evidence of “Dinosaurs” Living in the Recent Past

Jeff Miller, Ph.D.

Article In Brief...



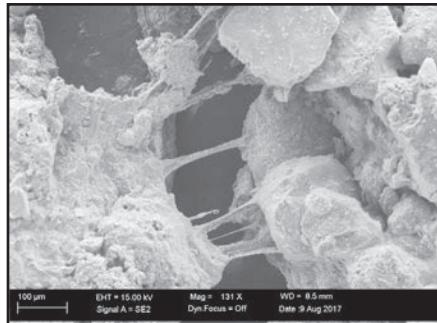
One of the most decisive scientific evidences that dinosaurs did not go extinct 65+ million years ago is the discovery of biomaterials in dinosaur fossils over the past two decades, including soft tissue and proteins. Biomaterials in marine reptile and pterosaur fossils from the Mesozoic and Paleozoic rock strata are also now being found, suggesting that the entire geologic column is only thousands, not hundreds of millions, of years old.

FOR a few years now, we have been documenting the ongoing progress of one of the most powerful scientific evidences of a young Earth.<sup>1</sup> Since evolutionist Mary Schweitzer began bringing to light soft tissue in dinosaur fossils in the early 2000s, the list of dinosaur species in which soft, stretchy tissue, collagen, blood vessels, cells, or proteins have been found has grown significantly, reaching ever deeper into the geologic column. Obviously, her research has been controversial and dismissed by many from the beginning, since all dinosaur fossils allegedly are at least 65-66 million years old—according to the evolutionary paradigm. While soft tissue could theoretically be preserved for thousands of years, if in a cool, dry, and

sterile environment (which is not the environment dinosaur fossils are found in), tens of thousands... hundreds of thousands...millions... tens of millions...hundreds of millions of years? Preposterous.<sup>2</sup> In the words of vertebrate paleontologist Philip Senter of Fayetteville State University in North Carolina, “The recent discovery of preserved cells and soft tissues in certain dinosaur bones seems incompatible with an age of millions of years, given the expectation that cells and soft tissues should have decayed away after millions of years. However, evidence from radiometric dating shows that dinosaur fossils are indeed millions of years old.”<sup>3</sup> Rather than consider the possibility that radiometric dating methods are unreliable at best,<sup>4</sup> Senter disregards the clear

implication of the latest scientific evidences in order to hold on to a blind “faith” in an old Earth and evolution, which requires millions of years to do its “work.” Finding biomaterials in rock layers thought by geologists to be 66-252 million years old effectively falsifies evolution and the radiometric dating methods that yield absolute<sup>5</sup> ages that high.

Schweitzer did more research in response to critics, to make sure contamination was not a factor and that her conclusions were accurate, but found the same results. Even more, other scientists added their voices to hers, separately finding biomaterials in their dinosaur fossils. Biomaterials in *Tyrannosaurus rex*,<sup>6</sup> hadrosaur,<sup>7</sup> triceratops,<sup>8</sup> seismosaur,<sup>9</sup> *Thescelosaurus*,<sup>10</sup> and *Psittacosaurus*<sup>11</sup> fossils from the Mesozoic (i.e., 66-252 million radiometric years old) rock layers have been found over the years, with more regularly being discovered. In the words of Rowan University vertebrate paleontologist Paul Ullmann and his colleagues, writing in *Cretaceous Research*, “Recovery of soft tissues and cells from fossil bones is becoming **increasingly common**, with structures morphologically consistent with vertebrate osteocytes, blood vessels, fibrous/collagenous matrix, and potential intravascular contents now recognized from specimens dating back to the Permian



Kevin Anderson (2017), *Echoes of the Jurassic: Discoveries of Dinosaur Soft-Tissue* (Cino Valley, AZ: CRS Books). Used by permission of the Creation Research Society



[i.e., 252-299 million radiometric years ago—JM].”<sup>12</sup>

Add to the thus-far-formidable list of dinosaur fossils with intact biomaterials the Mesozoic marine reptiles that have been discovered with biomaterials still intact—from mosasaurs<sup>13</sup> to ichthyosaurs<sup>14</sup> to plesiosaurs<sup>15</sup>—and it becomes increasingly clear that the discovery of biomaterials in these fossils are **not anomalies nor examples of contamination**. Studying dinosaur fossils with soft tissues still intact, University College of London bioengineer and professor Sergio Bertazzo and his colleagues, writing in *Nature*, highlighted that the fossils in which they found soft tissue showed no evidence of having been specially preserved by nature in any way. In other words, they were comparable to **typical** dinosaur fossils. They correctly reason in response that the soft tissue evidence “strongly suggests that the preservation of soft tissues and even proteins is a **more common phenomenon than previously accepted**.<sup>16</sup>

As if more proof were needed to establish the inadequacy of the old-Earth, evolutionary explanation of the evidence, scientists have also found soft tissue in Mesozoic pterosaurs (ancient flying reptiles), including a *Tupandactylus navigans* reported in *PLoS ONE* in August of last year.<sup>17</sup> Thought to have lived 100 million years ago, based on

the evolutionary timescale, *Nature* explained that “the specimen boasts soft-tissue remains of nearly all of the reptile’s imposing head crest, which is five times taller than its skull.”<sup>18</sup> While land-dwelling and water-dwelling creatures are more likely to be caught and preserved by fossil-forming phenomena (e.g., mudslides and lava flows), flying creatures can more easily “get above” them. The discovery of several fossilized pterosaurs,<sup>19</sup> then, is evidence of special catastrophic activity in the past, and the fact that many are found with soft tissue still intact is evidence of that special catastrophic activity in the **recent** past.<sup>20</sup>

Are not such evidences strongly and obviously in favor of a **young** Earth? Do they not strongly suggest that the Mesozoic and Paleozoic rock layers in which dinosaur, marine reptile, pterosaur, and other fossils with biomaterials are found are not as old as geologists have long believed—thousands, not hundreds of millions of years? Though evolutionists have advanced various theories attempting to explain millions-of-years-old biomaterials in light of evolution, the theories fall woefully short of explaining the evidence.<sup>21</sup> Only a closed-minded, blind “faith” in the evolutionary paradigm would see soft, stretchy dinosaur tissue and immediately disregard the simple (and obvious)

possibility that dinosaur fossils are not as old as uniformitarian geology and radiometric dating methods claim. And yet the evidence speaks clearly: Darwinian evolution over millions of years is not an adequate explanation for the origin of the Earth's inhabitants. By using the Bible as the foundation for scientific study, biblical creationists had it right long before Darwinian evolution and uniformitarian geology emerged in the 19<sup>th</sup> century.

## ENDNOTES

- <sup>1</sup> E.g., Eric Lyons and Kyle Butt (2008), *The Dinosaur Delusion* (Montgomery, AL: Apologetics Press), pp. 153–155; Kyle Butt (2009), “Recent Hype Over Dinosaur Soft Tissue,” Apologetics Press, <https://apologeticspress.org/recent-hype-over-dinosaur-soft-tissue-2745/>; Eric Lyons (2009), “Controversial Collagen Confirmation Points to Creation,” Apologetics Press, <https://apologeticspress.org/controversial-collagen-confirmation-points-to-creation-338/>.
- <sup>2</sup> The evidence shows that fossils can form in a matter of months in catastrophic conditions [e.g., Hisatada Akahane, Takeshi Furuno, Hiroshi Miyajima, Toshiyuki Yoshikawa, and Shigeru Yamamoto (2004), “Rapid Wood Silicification in Hot Spring Water: An Explanation of Silicification of Wood During the Earth’s History,” *Sedimentary Geology*, 169[3–4]:219–228, July 15; Alan Channing and Dianne Edwards (2004), “Experimental Taphonomy: Silicification of Plants in Yellowstone Hot-Spring Environments,” *Transactions of the Royal Society of Edinburgh: Earth Sciences*, 94:503–521], but on the upper end, scientists believe that “[p]reserved remains become fossils if they reach an age of about 10,000 years,” not millions [“Fossil” (2013), *National Geographic: Resource Library* on-line, <https://www.nationalgeographic.org/encyclopedia/fossil/>].
- <sup>3</sup> Philip J. Senter (2021), “Preservation of Soft Tissues in Dinosaur Fossils: Compatibility with an Age of Millions of Years,” *The American Biology Teacher*, 83[5]:298–302, emp. added.
- <sup>4</sup> Jeff Miller (2013), “Don’t Assume Too Much: Not All Assumptions in Science Are Bad,” *Reason & Revelation*, 33[6]:62–70, <https://apologeticspress.org/wp-content/uploads/2021/08/1306.pdf>.
- <sup>5</sup> Geologists distinguish between relative ages and absolute ages when referring to dating geologic formations. Relative ages make mere comparisons (e.g., a deeper rock strata must be older than a higher rock strata), while absolute ages attempt to give “exact” ages (e.g., this rock is 65–75 million years old).
- <sup>6</sup> M. Schweitzer, et al. (2005), “Soft-tissue, Vessels and Cellular Preservation in *Tyrannosaurus Rex*,” *Science*, 307:1952–1955; E.M. Boatman, et al. (2020), “Mechanisms of Soft Tissue and Protein Preservation in *Tyrannosaurus rex*,” *Scientific Reports*, 9[15678], October 30.
- <sup>7</sup> M. Schweitzer, et al. (2009), “Biomolecular Characterization and Protein Sequences of the Campanian Hadrosaur *B. canadensis*,” *Science*, 324:626–631; P.V. Ullman, S.H. Pandya, and R. Nellermoe (2019), “Patterns of Soft Tissue and Cellular Preservation in Relation to Fossil Bone Tissue Structure and Overburden Depth at the Standing Rock Hadrosaur Site, Mastrichtian Hell Creek Formation, South Dakota, USA,” *Cretaceous Research*, 99:1–13.
- <sup>8</sup> Mark Armitage and Kevin Anderson (2013), “Soft Sheets of Fibrillar Bone from a Fossil of the Supraorbital Horn of the Dinosaur *Triceratops horridus*,” *Acta Histochemica*, 115[6]:603–608.
- <sup>9</sup> L.R. Gurley, et al. (1991), “Proteins in the Fossil Bone of the Dinosaur, *Seismosaurus*,” *Journal of Protein Chemistry*, 10:75–90.
- <sup>10</sup> Kevin Anderson (2017), *Echoes of the Jurassic* (Chino Valley, AZ: CRS Books), pp. 34–35.
- <sup>11</sup> T. Lingham-Soliar (2008), “A Unique Cross Section Through the Skin of the Dinosaur *Psittacosaurus* from China Showing a Complex Fibre Architecture,” *Proceedings of the Royal Society B: Biological Sciences*, 275:775–780.
- <sup>12</sup> Ullmann, et al., p. 1, emp. added.
- <sup>13</sup> Johan Lindgren, et al. (2011), “Microspectroscopic Evidence of Cretaceous Bone Proteins,” *PLoS ONE*, 6[4]:e19445.
- <sup>14</sup> Johan Lindgren (2018), “Soft-tissue Evidence for Homeothermy and Crypsis in a Jurassic Ichthyosaur,” *Nature*, 564[7736]:359–365, December.
- <sup>15</sup> Eberhard Frey, et al. (2017), “A New Polycotylid Plesiosaur with Extensive Soft Tissue Preservation from the Early Late Cretaceous of Northeast Mexico,” *Boletin de la Sociedad Geologica Mexicana*, 69:87–134.
- <sup>16</sup> Sergio Bertazzo, et al. (2015), “Fibres and Cellular Structures Preserved in 75-Million-Year-Old Dinosaur Specimens,” *Nature Communications*, 6[7352], <https://www.nature.com/articles/ncomms8352>, emp. added.
- <sup>17</sup> Victor Beccari, et al. (2021), “Osteology of an Exceptionally Well-preserved Tapejarid Skeleton from Brazil: Revealing the Anatomy of a Curious Pterodactyloid Clade,” *PLoS ONE*, August 25, <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0254789>.
- <sup>18</sup> “Extreme Headgear of a Plundered Pterosaur” (2021), *Nature: Research Highlights*, 597[7874]:10, September 2.
- <sup>19</sup> E.g., S. Christopher Bennett (2002), “Soft Tissue Preservation of the Cranial Crest of the Pterosaur *Germanodactylus* from Solnhofen,” *Journal of Vertebrate Paleontology*, 22[1]:43–48; Alexander W.A. Kellner, et al. (2009), “The Soft Tissue of *Jeholopterus* (Pterosauria, Anurognathidae, Batrachognathinae) and the Structure of the Pterosaur Wing Membrane,” *Proceedings of the Royal Society B: Biological Sciences*, 277[1679]:321–329; D. Hone, et al. (2015), “A Specimen of *Rhamphorhynchus* with Soft Tissue Preservation, Stomach Contents and a Putative Coprolite,” *PeerJ*, 3:e1191.
- <sup>20</sup> The Mesozoic rock layers in which are found dinosaurs, pterosaurs, and the aforementioned marine reptiles are thought by creationists to have been deposited during the biblical Flood (Genesis 6–9), roughly 4,500 years ago.
- <sup>21</sup> See the special Spring, 2015 *Creation Research Society Quarterly* issue devoted to the topic, as well as the subsequent work being conducted on the subject by the Creation Research Society (iDino2).



# NOTE FROM *The Editor*



## 2021 Bound Volumes

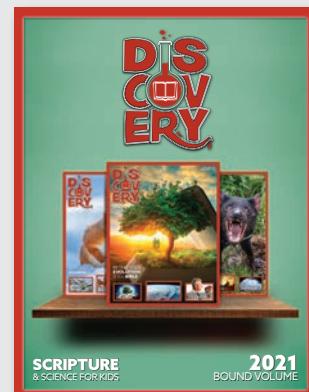
The 2021 bound volumes of our two monthly magazines are now complete and ready for shipment from our offices. The bound volume of *Reason & Revelation* contains timely articles on such topics as: Homosexuality: Society, Science, and Psychology; Is it Racist to Oppose Homosexuality?; What is Messianic Judaism?; Behemoth, the Hippo, & Egyptian Pehemu; Jesus' Prophecy of the Fall of Jerusalem in A.D. 70; God's Defense Recipe in 1 Peter 3:15; Lot's Daughters; Three Things We Can Learn From Atheists; Concubines?; Is God the Cause of Evil in the World?; Origin of Gender; The Ironclad Beetle; The Lord's Supper on Sunday?; Apologetics and the Scoffer; The Closest Thing We Have to a "Real Life" Dragon; Does the Warfare & Violence in the Old Testament Differ with the Quran?; David and Jonathan: Homosexuals?; "Everybody Knows the Bible Contradicts Itself"; Baby Dinosaurs on the Ark?



As always, this beautifully bound, annual collation contains all 12 issues for the year, as well as an author/title index and attractive cover. Previous volumes from 1995-2006 are still available. See the Ceterspread for pricing.

Additionally, the 2021 bound volume of *Discovery*, our monthly magazine on Scripture and science for children, now is available. During 2021, *Discovery* contained articles on such relevant topics as: Plate Tectonics, Pangea, & the Flood; Fish; Dinosaurs; Crucifixion; The Design Argument; Squirrels; Ostriches; Miracles of Jesus; Doers of the Word; Animals, Australia, & the Flood; Amazing Eyes Designed by God; Evolution & the Bible; and many others. Kyle Butt and Eric Lyons serve as editor and associate editor of *Discovery* and do a marvelous job in presenting themes and topics that build the faith of children and insulate them against unbelief. We also have in stock bound volumes for 1998-2006.

These bound volumes enable the articles contained therein to remain relevant far beyond the time period during which they were authored. Please be reminded that for both *Discovery* and *Reason & Revelation*, whenever the bound volumes go out of print, they are gone forever; we do not reprint them. So be sure to order your copies soon.



Dave Miller